Gaze behaviour in offside decision-making in football: A field study

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The offside in football is probably one of the most disputed game-situation in sports. So far, perceptual errors in judging offside were investigated only in laboratory settings (Catteeuw et al, 2009). Therefore, the present study aimed to examine the gaze behaviour of assistant referees (AR) in real offside decision-making situations.

Methods

6 ARs of the Swiss Football Association (3 experts: FIFA, 3 near-experts: 2nd Division) had to assess 36 offside scenes (9 mother scenes x 4 variations, i.e., different passing options) that were performed by a U-21 team (FC Thun) in a football stadium. Gaze behaviour was recorded with a mobile eye tracker (EyeSeeCam, 60 Hz) and decision-making skills were assessed using a digital video camera on the opposite side of the field of play. After editing the recorded videos (Kinovea 0.8.15), the number, lengths and locations of the fixations per scene were determined manually from the raw material.

Results

The experts rated the offside situations significantly better than the near-experts, χ^2 (1, N = 177) = 4.93, $p < .05$, $\varphi = .17$. However, no differences were found between the groups for visual search patterns, χ^2 (1, N = 177) = 0.01, $p = .91$, $\varphi = .01$. Still, a strong correlation ($r = .62$) between decision accuracy and the number of the fixations at the moment of the final pass was revealed. Furthermore, a trend towards higher decision accuracy was observed when the offside line was fixated, χ^2 (1, N = 177) = 3.17, $p = .07$, $\varphi = .13$.

Discussion

This field study, at least to the best of our knowledge, was the first examination on gaze behaviour in real offside decision-making situations. It could not be shown that AR with different levels of expertise differs regarding their gaze characteristics. For decision accuracy, it seems best to focus on the offside line in order to be able to accurately evaluate the attacker's position relative to the offside line.

References

Catteeuw, P., Helsen, W., Gilis, B., Van Roie, E., & Wagemans, J. (2009). Visual scan patterns and decision making skills of association football assistant referees in offside situations. *Journal of Sport & Exercise Psychology, 31*, 786–797.